

Ash Meadows Pupfish Preserve



A proposal from
The Nature Conservancy

ASH MEADOWS
PUPFISH PRESERVE

A PROPOSAL FROM
THE NATURE CONSERVANCY

SUMMARY

The Ash Meadows region of southwest Nevada has evolved since the last period of glaciation into a unique alkali desert ecosystem. The remnant springs, pools and streams, and the area's unusual soils combine to support an endemic flora. The year-round supply of water also provides habitat for several species of endangered pupfish.

The pupfish exhibit the virtually unequaled ability to adapt to extreme and rapidly changing aquatic environments. They are thus more than a mere curiosity, for their value to evolutionary science and genetic research is unparalleled. They are also an integral component of an important desert ecosystem and their existence adds immeasurably to the diversity of life.

In recent years, the Ash Meadows area has come under increasing pressure for agricultural and recreational development. Though highly adapted, many desert species, particularly the pupfish, cannot withstand severe alterations of the landscape. Human activities have already led to the extinction of three forms of pupfish and place the remaining species in an endangered status. Many plant species here are also on threatened and endangered lists.

The Nature Conservancy, a national, non-profit organization dedicated to preserving biotic diversity, has secured an option to purchase 320 acres in the heart of Ash Meadows. The optioned property is one of the least disturbed and most representative examples of the Ash Meadows ecosystem. Acquisition will ensure protection of the Ash Meadows pupfish and preserve intact a part of this unique desert environment, including three endangered plant species. The property will be managed as a sanctuary with research and educational activities encouraged.

The Conservancy's option expires on May 15, 1979. By that date \$250,000 must be raised to meet the \$224,000 purchase price, cover acquisition costs and create a management endowment. Your support is urgently needed to establish a permanent and irreplaceable Ash Meadows Pupfish Preserve.

ASH MEADOWS

Located in southern Nye County, Nevada, just a few miles from the California border and about 70 miles northwest of Las Vegas, the Ash Meadows region is a unique ecosystem in the United States. Its unusual features are the result of relatively recent geologic history. About 50,000 years ago, during the last phase of glaciation, this part of the United States was covered with a system of lakes and streams. But as the climate began to change, these lakes and streams gradually gave way to a very different, desert environment. In what is now Ash Meadows a receding lake left an old playa, or dry lake bed, which has produced the area's distinctive alkali soils. In addition to this feature, Ash Meadows is distinguished by small "islands" of water, the perennial spring remnants of the Pleistocene system of waterways. This combination of year-round water flow and unusual soils has produced a desert oasis, unique in its natural elements.



Tamarisk and native ash for which Ash Meadows was named

While most species of plants are unable to survive in a harsh alkali desert flat, a number of species have evolved which are specifically adapted to this environment. Active speciation continues here, creating an unparalleled opportunity for taxonomic and evolutionary research. Unfortunately, because of their restricted distribution and fragility, many of the Ash Meadows endemics are listed on the Smithsonian Institution's register of endangered and threatened plant species.

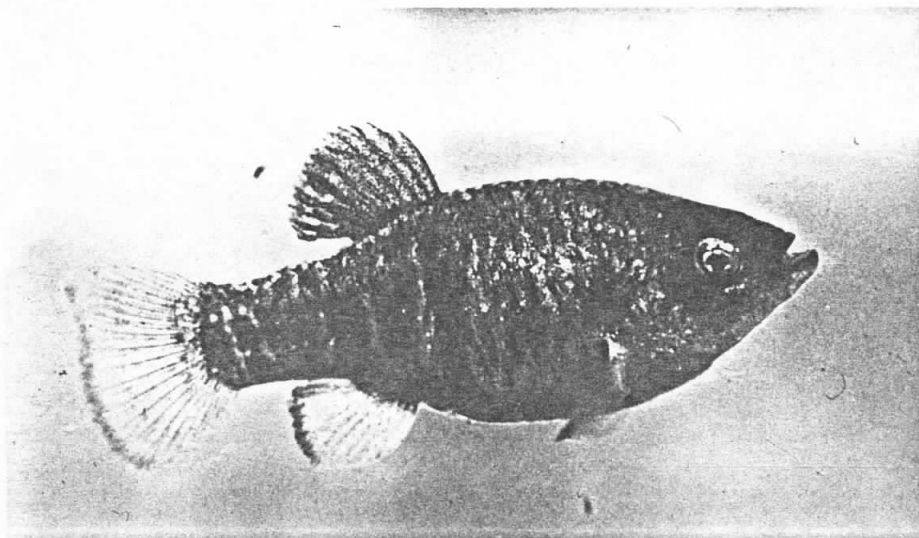
In addition to supporting an unusual flora, the presence of water attracts numerous species of birds and is of critical importance for migratory populations. The water supply is also necessary for the survival of resident desert mammals such as the bobcat and coyote. The most important and endangered form of life in this area, however, is the Ash Meadows pupfish.

PUPFISH

The contemporary significance of, and underlying reasons for preserving, the remaining species of pupfish are linked to their fascinating evolutionary history. The ancestors of today's species flourished in the Death Valley region during the Pleistocene era, in the huge system of inter-connected lakes and streams. As the climate became warmer and drier the ecosystem changed dramatically. Most animals inhabiting the area, such as mastodons, sabre tooth tigers and ground sloths, were unable to adapt to this rapid change of environment. The native fish were isolated to

increasingly smaller habitat until, finally, about 4,000 years ago, the animals were confined to hot springs and the saline remnants of former lakes.

Since this geologically recent confinement, the one-to-two inch pupfish have undergone some astounding adaptations to an environment intolerable to most other living things. Sterling Bunnell, writing in a 1970 issue of Cry California, stated that "the pupfish represent one of the most striking examples of evolutionary change now to be found on our planet". Their ability to quickly adapt to diverse and extreme conditions is almost unmatched. Since isolation of the ancestral stock, several species and subspecies have evolved, each well-fitted to its individual and particular niche. Some populations inhabit fresh water springs and pools, while others live in saline environments up to five times more concentrated than sea water. They prosper in temperatures from 72°-93°F, but have been found in water as hot as 112°F. Some can withstand freezing conditions by hibernating in the mud.



Ash Meadows Pupfish

Science is just at the threshold of understanding the complex genetic make-up that permits such remarkable evolution of these animals. What can be learned will be of far more than theoretical interest. It has been suggested, for example, that as human exposure to radiation dosages increases we can learn a great deal from the pupfish's ability to handle what appears to be abnormally high mutation loads, a condition which normally leads to extinction, particularly in small populations. Too, much can be gained in the area of medicine and space research from the pupfish's tolerance of high temperatures, low oxygen concentrations and salinity. Mankind can also benefit economically by applying a clear understanding of evolution and genetics to the breeding of domestic animals. As Leontine Nappe wrote in a recent article featured in National Parks and Conservation Magazine, "the pupfish springs themselves have been compared in their significance to science with the famed Galapagos Islands, for the divergence shown by their tiny inhabitants is every bit as striking as that of Darwin's finches".

Even beyond these practical implications of pupfish survival, their mere existence adds greatly to the diversity and richness of the environment, a dimension of life too rapidly diminishing. Pupfish are important in themselves, and to the whole scheme of creation; they should be allowed to follow their natural course of destiny without interference. Despite the surprising

adaptability of these fish, though, their existence depends on one immutable requirement: an unfailing supply of water at levels adequate to sustain breeding.

THREATS TO ASH MEADOWS PUPFISH

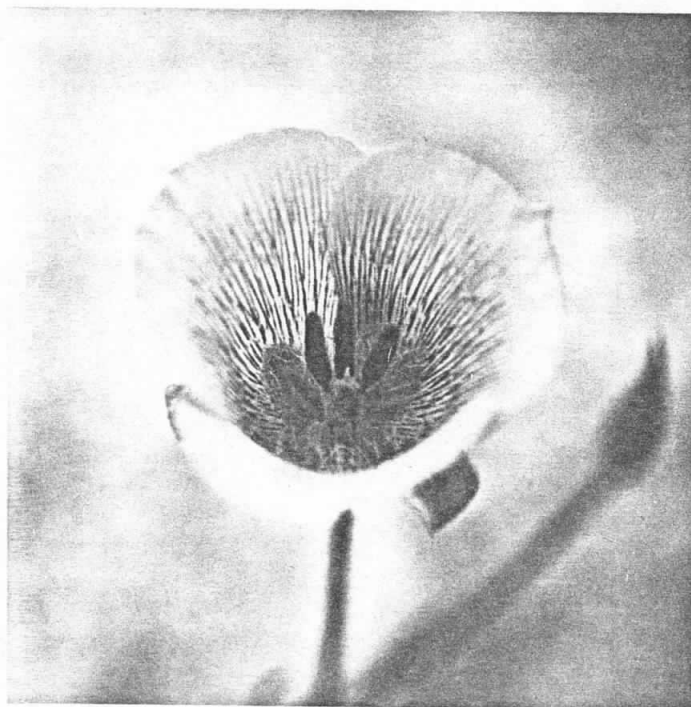
It has primarily been two kinds of human activities that have led to the elimination of three forms of pupfish and now pose an imminent threat to those that remain. The first threat is the introduction of non-native species to pupfish habitat. These exotic introductions have included aquarium species, mosquitofish and game fish. Although the pupfish seem quite aggressive, the introduced species tend to occupy surface waters, forcing the pupfish to depths inadequate for breeding. The second activity which threatens pupfish survival is disturbance of their habitat. Because of the area's year-round supply of water, scenic landscape and proximity to Las Vegas, Ash Meadows has become increasingly popular for agricultural and recreational development. The "reclamation" of Ash Meadows by drainage, filling and diversion of surface waters for irrigation continues unabated. No state or federal legislation adequately protects these animals from private development. A small, disjunct part of Death Valley National Monument protects Devil's Hole, home for the Devil's Hole Pupfish. But Senate Bill 2589, which would have created a Desert Pupfish National Monument, was not voted on last year and it appears

unlikely that similar legislation will be introduced in the future. Prompt action is necessary to ensure permanent protection.

THE ASH MEADOWS PUPFISH PRESERVE

In 1969 The Nature Conservancy acquired 80 acres around Big Spring, prime habitat for the Ash Meadows pupfish (Cyprinodon nevadensis mionectes). Since then, the Conservancy has been attempting to expand this sanctuary to better protect the resident pupfish and to preserve a sufficiently large representative example of the Ash Meadows ecosystem. In January 1979 the Conservancy secured an option to purchase 320 acres contiguous to the existing preserve. A stream supporting a large and healthy population of pupfish flows the length of the property, and because the parcel is relatively unscarred by human activity, it remains as one of the best examples of what the Ash Meadows area was once like. Three of the endangered and threatened species found in Ash Meadows occur on the property: the spring-loving centaury (Centaureum namophilum), bladderpod (Astragalus phoenix) and the star tulip (Calochortus striatus). Though no extensive research has been done on the property, informal sitings reveal a richness and diversity of bird life unusual in the desert. Literally thousands of waterfowl are found in the stream during the winter migration. Several species of warblers are abundant in the riparian habitat during spring months.

The abundant and reliable supply of fresh water also makes the site extremely attractive for agricultural and development interests. Just prior to the Conservancy's involvement, an offer was made to acquire the land for \$400 more per acre than under the Conservancy option. Since the option was signed, an even higher offer has been made (which will probably be accepted should we fail to raise the needed funds).



Endangered star tulip
(Calochortus striatus)

If the Conservancy can successfully exercise its purchase option, the property will be set aside as a permanent living museum. Continued research on the pupfish and native vegetation will be encouraged. Efforts will be made to control the damage caused by feral horses. These animals, travelling in

herds, are impacting the soil and grazing some of the native vegetation. Fencing may be the ultimate solution to this increasing problem. As with other Conservancy preserves, public visitation will be allowed on a pre-arranged, limited basis. The property will be managed by the Conservancy's Southern California Chapter.

THE NEED

The Nature Conservancy's option expires on May 15, 1979. By that date we must raise \$250,000; of that amount \$224,000 represents the purchase price, while about \$3,500 will be necessary for fundraising expenses and acquisition-related costs. The remainder, approximately \$22,500, will be set aside for a management endowment. The annual income from this endowment will be used to sponsor research projects and cover necessary maintenance expenses.

The Ash Meadows pupfish is at a critical crossroad. Although it has adapted to a severe environment with surprising ease and speed, it cannot survive the destructive changes wrought by human activity. Its fate will probably be sealed within the next few years; whether some species are to perish or to survive along with the surrounding desert environment will depend to a large degree on the efforts of private organizations like The Nature Conservancy. Seldom will the opportunity

again arise to preserve such a large part of this unique ecosystem with its endangered residents. As Leontine Nappe so aptly writes:

"In a sense these tiny fishes present Americans of all walks of life a great and subtle challenge. It is easy to wax enthusiastic over mighty canyons, towering mountains, pristine valleys, or jewel-decked caverns. They speak in grand tones of the artistry of nature. But what of the seemingly insignificant pupfish, living out its precious existence in a remote desert pool? Are we not obliged to feel that he, too, is a part of nature's artistry and design?"

Your generous support is urgently needed to establish the Ash Meadows Pupfish Preserve.

THE NATURE CONSERVANCY

The Nature Conservancy is a private, non-profit conservation organization incorporated in the District of Columbia for scientific and educational purposes. It has received national recognition and acclaim for its land saving efforts. The Conservancy is the only national environmental organization whose resources are devoted solely to the preservation of ecologically significant land. Because of its focus on land saving, as well as its business-like efficiency and independence, the Conservancy can move quickly and bargain effectively when opportunities arise.

Through either gift or purchase the Conservancy has acquired over 1.3 million acres of natural land from Maine to Hawaii. Because of the heavy demand for land-saving funds, the Conservancy purchases land only where rare life forms or intact ecosystems are threatened. The funds needed are contributed principally by private individuals, foundations and corporations.

The Ash Meadows Pupfish Preserve is not only one of the most recent, but also one of the most significant natural areas we have undertaken to protect.

APPENDIX

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- i. Letter from James E. Deacon, University of Nevada
- ii. Letter from E.P. Pister, Desert Fishes Council
- iii. Letter of Tax Exemption
- iv. Bibliography
- v. Map



UNIVERSITY OF NEVADA, LAS VEGAS

4505 Maryland Parkway

Las Vegas, Nevada 89154

Department of Biological Sciences (702) 739-3399

RECEIVED

FEB 20 1978

The Nature Conservancy
Western Regional Office

February 16, 1979

Mr. Steve McCormick
California Field Representative
Nature Conservancy Western Regional Office
425 Bush Street
San Francisco, California 94108

Dear Steve:

I certainly endorse the efforts of the Nature Conservancy to acquire the property adjacent to the Big Spring Preserve in Ash Meadows, Nevada.

The outflow from Jack Rabbit Spring historically has contained a significant population of pupfish identical to the fish occupying Big Spring. The purchase of the 320 acre parcel would include significant waters having variable temperatures - a situation I believe to have been most significant in the evolution of the species. While the Big Spring Preserve effectively saves a pupfish population living in constant temperature waters, in order to save the full range of environmental variables to which these fishes are and have been exposed, it is necessary to have substantial areas of fluctuating temperature environment. This latter necessity would be served by the Jack Rabbit outflow acquisition.

As you know, the rampant land development taking place in Ash Meadows virtually guarantees that the Nature Conservancy Preserve, plus a very few small federal holdings, will be the only remaining habitats for pupfishes in this area. It appears to me that we have already lost something like 90% of the original pupfish habitat in Ash Meadows. The numerous endemic plants occurring in the area provide additional very solid justification for the interest the Nature Conservancy has shown in acquisition of the land encompassing the outflow of Jack Rabbit Spring.

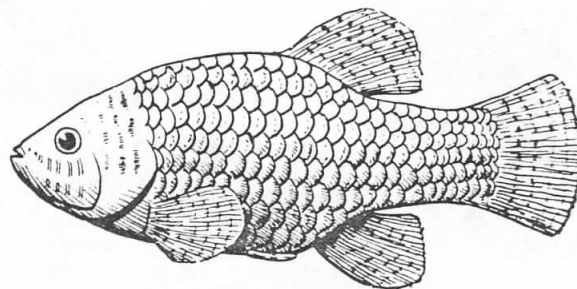
Sincerely,

A handwritten signature in cursive script, appearing to read "James E. Deacon".

James E. Deacon

JED/msm

Desert Fishes Council



"Dedicated to the Preservation of America's Desert Fishes"

407 West Line Street
Bishop, California 93514
February 6, 1979

RECEIVED

FEB 8 1979

The Nature Conservancy
Western Regional Office

Mr. Steve McCormick
The Nature Conservancy
425 Bush Street
San Francisco, CA 94108

Dear Mr. McCormick:

It has come to the attention of this Council that the Nature Conservancy is interested in acquiring property adjacent to its current holdings at Big Spring, Ash Meadows, Nye County, Nevada. I know I reflect the unanimous opinion of the Council membership when I urge you to do so.

The Desert Fishes Council is an organization numbering in excess of 300 persons and comprising a nationwide and international representation of federal, state, and university scientists and resource specialists, members of conservation organizations, and individuals concerned with long-term environmental values. The Council was formed a decade ago, primarily in an effort to protect the aquatic habitats in and around Ash Meadows. We recognized the area at that time as unique and of enormous value for a variety of reasons. The endemism and speciation shown by the Ash Meadows fish fauna is equalled on the North American continent only in the Cuatro Ciénegas Basin of Coahuila, México, and this area is rapidly being destroyed by agricultural development. Also of great value are the plant species of Ash Meadows, several of which are in an endangered status. It therefore behooves those of us who care to place as much of the area as possible in public ownership. The Council was instrumental in bringing about the events leading to a 1976 Supreme Court decision protecting the water level at Devils Hole, and this same judgment would serve to provide a degree of protection to the aquifers throughout that area.

Again, let me emphasize the great value of the Ash Meadows area, a value which our research is only now beginning to allow us to appreciate. We have only scratched the surface of the biological values inherent in this area. Public (or Conservancy) ownership in Ash Meadows will help to assure that these values may someday be fully realized.

Sincerely,

E. P. Pister
Secretary



Internal Revenue Service

Washington, D. C. 20543

Date:

In reply refer to

DEC 19 1968

T:I:I:1:1

The Nature Conservancy
1522 K Street, N. W.
Washington, D. C. 20005

Attention: Z. R. Kingman
Vice President

Gentleman:

This is in reply to your letter dated October 9, 1968, requesting a ruling that you qualify as a "publicly supported" organization under section 170(b)(1)(A)(vi) of the Internal Revenue Code so that contributions to you are subject to the special limitation provisions of section 170(b)(1)(A) of the Code.

Under section 170(b)(1)(A) of the Code an individual is allowed an additional deduction not exceeding 10 percent of his adjusted gross income for contributions made to certain organizations, including an organization described in section 170(b)(1)(A)(vi) of the Code.

Section 170(b)(1)(A)(vi) of the Code describes an organization referred to in section 170(c)(2) which normally receives a substantial part of its support (exclusive of income received in the exercise or performance by such organization of its charitable, educational, or other purpose or function constituting the basis for its exemption under section 501(a)) from a governmental unit referred to in section 170(c)(1) or from direct or indirect contributions from the general public.

The information submitted with your request discloses the following:

You are exempt from Federal income tax as an organization described in section 501(c)(3) of the Code, which is substantially similar to section 170(c)(2), and contributions to you are deductible under section 170 of the Code.

You were incorporated in October 1951 as a nonprofit corporation under the laws of the District of Columbia. Your purposes, as set forth in your Certificate of Incorporation, are (a) to preserve or

aid in the preservation of all types of wild nature, including natural areas, features, objects, flora and fauna, and biotic communities; (b) to establish nature reserves or other protected areas to be used for scientific, educational, and esthetic purposes; (c) to promote the conservation and proper use of natural resources; (d) to engage in or promote the study of plant and animal communities and of other phases of ecology, natural history, and conservation; and (e) to promote education in the fields of nature preservation and conservation.

It is stated that your primary objective is to acquire and to protect outstanding natural areas. By early 1968, you had been instrumental in having nearly 95,000 acres set aside as sanctuaries and preserves throughout the United States, and you anticipate that you will reach the 100,000 acre mark before the end of the calendar year. You acquire land either by gift or by purchase and a great deal of this procurement is for Federal, state and local governments. Your activities include the chartering of local subordinate chapters to perform local functions in carrying out your purposes.

Your by-laws provide for several classes of membership and specify the contribution required for membership in each membership class. Membership in your organization is open to any individual or organization approving of your objectives.

You are governed by a Board of Governors which presently consists of a Chairman of the Board, a Vice Chairman, Secretary, Treasurer and twenty-one members at large. It is stated that the members at large are chosen, insofar as possible, because of their skills, varied interests, and their deep and devoted interest in the conservation of this country's natural resources and an abiding love of the land itself. Additionally, an attempt is made to have the Board represent as many areas of the country as possible.

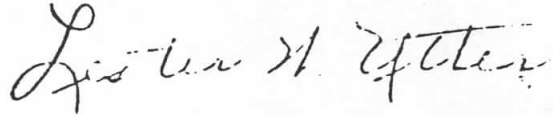
Your support for the four fiscal years June 30, 1965 through June 30, 1968, was derived substantially from contributions received directly and indirectly from the general public, as well as from membership dues and investment income. An article in the Sunday, November 10, 1968, issue of the Washington Post states that the Ford Foundation is giving you \$6 million to buy 97 tracts of land and hold them for later government use. Your method of making financial reports available to the public has been through your publication, The Nature Conservancy News. In addition to printing a summary in the News, you have always carried a notice stating that the complete financial statement was available upon request to your national headquarters office.

The Nature Conservancy

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The facts and circumstances presented indicate that you are a publicly supported organization described in section 170(b)(1)(A)(vi) of the Code. Accordingly, the special limitation provided in section 170(b)(1)(A) of the Code is applicable to contributions made to you by individual donors.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Lester H. Rafter".

Chief, Individual Income Tax Branch

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